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IN THE CLAIMS

Claims 1-11 (Canceled).

12 (Original). An apparatus comprising:

execution circuitry to receive and execute a first thread of instructions corresponding to a first graphical element of an image and a second thread of instructions corresponding to a second graphical element of the image, wherein the execution circuit transmits a semaphore request message and places the first thread in an inactive state in response to the first thread requiring a resource having an associated semaphore; and

a semaphore entity coupled with the execution circuitry to receive the semaphore request message from the execution circuitry and to selectively grant control of the semaphore in response to the semaphore request message by transmitting a semaphore acknowledge message to the execution circuitry, wherein the execution circuitry, in response to receiving the semaphore acknowledge message, removes the thread of instructions from the inactive state.

13 (Original). The apparatus of claim 12 wherein the execution circuitry comprises:

a first execution circuit to execute the first thread of instructions; and
a second execution circuit to execute the second thread of instructions.

14 (Original). The apparatus of claim 12 wherein the first thread comprises a first set of ray tracing instructions and the first graphical element comprises a first ray segment, and further wherein the second thread comprises a second set of ray tracing instructions and the second graphical element comprises a second ray segment.

15 (Original). The apparatus of claim 12 wherein the first thread comprises a first set of video decoding instructions and the first graphical element comprises a first picture segment, and further wherein the second thread comprises a second set of video decoding instructions and the second graphical element comprises a second picture segment.

16 (Original). The apparatus of claim 15 wherein the first picture segment comprises a first macroblock and the second picture segment comprises a second macroblock.

17 (Original). The apparatus of claim 12 wherein the first thread comprises a first set of three-dimensional rendering instructions and the first graphical element comprises a first render primitive, and further wherein the second thread comprises a second set of three-dimensional rendering instructions and the second graphical element comprises a second render primitive.

18 (Original). The apparatus of claim 17 wherein the first render primitive comprises one of a first point, a first line, a first triangle, and a first triangle strip, and further wherein the second render primitive comprises one of a second point, a second line, a second triangle, and a second triangle strip.

19 (Original). The apparatus of claim 12 further comprising a memory coupled with the execution circuitry to store the first thread of instructions and the second thread of instructions.

20 (Original). The apparatus of claim 12 further comprising:
at least one additional execution circuit to execute threads of instructions; and
a thread dispatcher coupled with the execution circuitry and at least one additional execution circuit to dispatch threads for execution.

21 (Original). The apparatus of claim 12 wherein when the first thread of instructions is in the inactive state, execution of the instructions ceases and the execution circuitry does not poll the semaphore entity to determine a status of the semaphore request message.

Claims 22-25 (Canceled).

26 (Original). A system comprising:
a memory controller;
execution circuitry coupled with the memory controller to receive and execute a first thread of instructions corresponding to a first graphical element of an image and a second

thread of instructions corresponding to a second graphical element of the image, wherein the execution circuit transmits a semaphore request message and places the first thread in an inactive state in response to the first thread requiring a resource having an associated semaphore; and

a semaphore entity coupled with the execution circuitry to receive the semaphore request message from the execution circuitry and to selectively grant control of the semaphore in response to the semaphore request message by transmitting a semaphore acknowledge message to the execution circuitry, wherein the execution circuitry, in response to receiving the semaphore acknowledge message, removes the thread of instructions from the inactive state.

27 (Original). The system of claim 26 wherein the execution circuitry comprises:

- a first execution circuit to execute the first thread of instructions; and
- a second execution circuit to execute the second thread of instructions.

28 (Original). The system of claim 26 wherein the first thread comprises a first set of ray tracing instructions and the first graphical element comprises a first ray segment, and further wherein the second thread comprises a second set of ray tracing instructions and the second graphical element comprises a second ray segment.

29 (Original). The system of claim 26 wherein the first thread comprises a first set of video decoding instructions and the first graphical element comprises a first macroblock, and further wherein the second thread comprises a second set of video decoding instructions and the second graphical element comprises a second macroblock.

30 (Original). The system of claim 29 wherein the first picture segment comprises a first macroblock and the second picture segment comprises a second macroblock.

31 (Original). The system of claim 26 wherein the first thread comprises a first set of three-dimensional rendering instructions and the first graphical element comprises a first portion render primitive, and further wherein the second thread comprises a second set of three-dimensional rendering instructions and the second graphical element comprises a second render primitive.

32 (Original). The system of claim 31 wherein the first render primitive comprises one of a first point, a first line, a first triangle, and a first triangle strip, and further wherein the second render primitive comprises one of a second point, a second line, a second triangle, and a second triangle strip.

33 (Original). The system of claim 26 further comprising a memory coupled with the memory controller to store the first thread of instructions and the second thread of instructions.

34 (Original). The system of claim 26 wherein when the first thread of instructions is in the inactive state, execution of the instructions ceases and the execution circuitry does not poll the semaphore entity to determine a status of the semaphore request message.